D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

July 30, 2003

MEMORANDUM

TO: Jonathan McInnis
Site Assessment Section
Bureau of Land and Waste Management

Reference No.: 23
Barite Hill/Nevada Goldfields
HRS Documentation Record
EPA ID No. SCN000407714

FROM: Tom Knight, P.G. Manager
Groundwater Quality Section
Bureau of Water

John Wright
Groundwater Quality Section
Bureau of Water

SUBJECT: Nevada Goldfields Barite Hill Gold Mine
Site Visit July 16, 2003
McCormick County

On the referenced date the writers visited the referenced site for the Self Directed Workteam. The following conditions at the mine were noted.

- The main gate at the mine remains intact as well as some of the primary fencing around the site and fencing around the process/treatment pond areas. It appeared that the site had been accessed by vehicle from at least one dirt track along the edge of an adjacent farm field.
- On entering the main gate heavy sulfur like odor was noted. The gate is at least a quarter mile from the main pit. No observations of wind direction were made. The odor is persistent over the mine pit area.
- The main pit has been partially filled. High sulfide rock (pyrite primary sulfide) containing as much as an estimated 30 – 40 percent sulfide is present at the surface in the fill above the water table. A significant quantity of this material appeared to be present above the water table exposed to rainfall. A gypsum coating was noted on some of this material but it is highly variable and is not present over significant areas of the pyrite containing rock. The gypsum does not impede the penetration of rainfall into the high sulfide rock.
- In the area of the high sulfide fill, both what appeared to be iron sulfate bloom and elemental sulfur was noted on rocks. Based on thee observations, it appears that acid generation from pyrite oxidation is occurring actively at the site. Evaluation is needed to confirm this assumption.
- As long as the pyrite rich rock stays exposed to oxidizing and wet conditions in the quantities observed, acid leachate generation can be expected.
- Six to eight inch diameter pipes were present that led to a series of spray nozzles aimed into the pit. The rock along the edge of the pit below these nozzles was partially covered with about a ¼ inch of gypsum. The coating was permeable however. This coating is only present in a small area around the pit wall.
- Both oxidized rock and sulfide rich rock remains in-place along the pit walls. Several fractures, minor faults and apparent zones of permeable rock (as evidenced by deep oxidation zones) are present along the pit high walls.

- There is a pond present in the pit bottom. The water in this pond is a dark red color from iron and presumably a low ph (as at a similar pit in a different gold mine). Debris and a plastic drum were noted in the pond or floating in the pond. A sheen that appeared to be hydrocarbon was noted coming to the surface at times. Evaluation of the water quality in the pit is recommended.
- Although there is barbed wire fence around the treatment ponds, this area is easily accessed.
- Treatment ponds are still in place and are currently full of water. Liners remain in-place. At one end of the treatment lagoons, a large excavation is present. The excavation is unlined, extends into saprolite that retains geologic structure and has a foot or two of water in it. This excavation is situated and the channeling in the water basins are placed such that water overflows from the basins into the excavation where it seeps into the ground. Water quality in the treatment basins in unknown but at one time they appear to be the basins that held the pregnant leachate from the leachpads. Based on conversations with a. former project manager, the liners may direct water from the leach pads back to the treatment basins. It is unknown if these flow patterns still exist. Groundwater monitoring of this unlined pit is recommended.
- Some glass vials of a sodium compound were noted in a storage area adjacent to the process area. Some additional chemicals may be present in the container noted. Some drums, at least several empty were note in the process area.
- Homes with water supply wells were noted in the area.
- After the site visit the writers were informed that a creek is present about 40 feet from the pit behind a highwall. Based on observations of the conditions in the pit and geologic structures along the highwalls of the pit, investigation of the water quality in the creek is recommended.

Based on site observations, further investigation by the Self Directed Workteam is recommended if the parent company is unable to properly abandon the site to prevent acid generation, and runoff. If you have any questions or we may be of further assistance, please do not hesitate to contact Tom Knight at (803) 898-4251 or John Wright at (803) 898-4264.

cc: Upper Savannah District EQC

Nevada Goldfields Barite Hill Gold Mine Site Visit.doc
TK